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Six-day Chick Disease

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Introduction

Six-day chick disease is a term that has been coined to describe a fatal condition of brooder chicks which has appeared recently and which could not be attributed to any previously known cause. We have no accurate information when the disease was first noted in this country, although we have heard from various sources that a similar condition has been met with in past years. We were unable to obtain any reliable data concerning these previous losses and therefore have no knowledge as to whether the condition was identical. Our first experience of the trouble was in the early part of the 1942–43 hatching season when heavy losses among baby chicks were occurring on an accredited poultry farm in Staffordshire. Several batches of chicks, varying in age from seven to 14 days and comprising pure Rhode Island Reds, Light Sussex and crosses between these breeds and with White Leghorns, were submitted to us for *post-mortem* examination. Some of the autopsies showed unabsorbed yolk sacs, nephritis or evidence of chilling but there were no consistent findings and in many cases the chicks appeared to be perfectly normal. Bacteriological examination yielded completely negative results.

The syndrome of the condition as observed on this particular farm is typical of what we have subsequently noted both in the field and in our own experiments. Fertility and hatchability have been consistently good, the appearance of the chicks at hatching satisfactory, and the losses sustained during the subsequent seven days were not in excess of normal expectations. During this period the chicks ate readily and there was no tendency to crowd under the hover during the daytime. Commencing on the sixth day, heavy losses occurred and continued until the group was 12 to 14 days old with a peak in mortality on the eighth, ninth and tenth days. The manner of death was characteristic and not symptomatic of any known pathological condition.

The chicks which died during the night were found under the hover, but in the daytime many of the chicks, without showing any previous symptoms, died in the run, often in or near to the feed troughs. The birds did not appear to be in pain and the cheeping and huddling prior to death which is characteristic of bacillary white diarrhoea or brooder pneumonia, was not evident. In some instances the crop contained food and many chicks, although apparently unable to stand, continued to eat in a prone position. The length of time between the onset of symptoms and death was variable, from one to six hours. Frequently chicks which had been removed from a group as dead still evinced feeble movement up to four hours later. Marked hypersensitivity was noticeable among all the chicks and the provision of a new surface of mash resulted in pronounced activity despite an abundant residue of food in the troughs in which they had shown no previous interest. Food wastage was excessive due to the chicks showing discrimination and scratching the rejected meal into the litter. It was very noticeable by the end of the first week that a proportion of the chicks were showing excessive feathering. The feathers of the wings and tail were abnormally long and by the end of the second week were often trailing on the ground. This condition is not confined to six-day disease, but was always observed where the death-rate was typical and the condition was diagnosed. The mortality was apparently higher among these birds, whose feathers seemed to grow at the expense of the body which remained stunted even in the survivors. The accompanying photograph of an affected brood of chicks taken at noon on the ninth day is typical of the trouble.

Mortality between the sixth and 14th day after hatching amounted to approximately 25 per cent. of all chicks hatched during the 1942–43 season and up to 50 per cent. during last season. After the chicks are a fortnight old no further losses are usually experienced. At the National Poultry Institute three separate consignments of purchased day-old pullets from two sources each showed 30 per cent. deaths through six-day disease during the second week of life. The further losses to maturity were at a normal rate, the survivors grew well and their body weight and age at sexual maturity were satisfactory.

Preliminary Experimental Work

Our initial experiments in the summer of 1943 were undertaken to ascertain the cause of inexplicable and severe chick losses on a single poultry farm when there was no information to suggest that the condition was more widespread. The practice of brooding and management on this farm seemed to us to be very satisfactory and the general impression indicated that the trouble might be hereditary. The breeding stock had been flock mated and no individual reproductive records were available. We obtained from this farm, breeding stock of Rhode Island Reds whose progeny had shown consistently heavy chick mortality from six-day disease during the earlier part of the year. These were divided into three single-mated pens and the chicks pedigreed to the dam. The proportion of deaths between the sixth and 14th days, among the progeny from each individual mating, and between the sexes, was similar and there appeared to be no indication of an explanation on genetical grounds.

We then turned our attention to the possibility of nutritional defects being responsible and at the outset attempted to control the mortality by feeding a simplified and highly nutritious diet. The first of these tests was carried out through lack of equipment under difficult and unsatisfactory laboratory conditions. The experimental ration, however, proved completely successful and no losses occurred in the group of 100 chicks between the sixth and 14th days whereas 27 per cent. of the corresponding control group having free access to a National baby chick mash died during the same period. The experiment was then repeated under commercial conditions of housing. Two groups, each comprising 103 cross-bred chicks of mixed sexes, were used. The control group was given free access to a National baby chick mash and this was used, unless otherwise stated, throughout the subsequent experiments. It was compounded as follows :—

Parts by Weight

Fine miller's offals ...	31·75	Meat meal	7·50
Ground unmillable wheat	15·00	Meat and bone meal ...	5·00
Ground oats	10·00	Dried skim milk ...	6·25
Potato flakes	10·00	Ground chalk	3·00
Palm kernel cake meal	5·00	Common salt	0·50
Maize gluten meal ...	5·00	Pool veterinary cod-liver oil	1·00

Samples of the mash were drawn from the centre of each bag in the consignment. These were mixed and a final sample drawn

for chemical analysis which showed the following percentage composition :—

Moisture	13·6	Crude fibre	5·0
Crude protein	18·0	Ash	10·6
Ether extract	4·1	Nitrogen-free extractives	48·7

The experimental group was allowed free access to the following foods which were fed in separate containers :—

(1) Coarse miller's offals, to which had been added 2 per cent. by weight of cod-liver oil ; (2) chopped hard-boiled egg ; (3) fresh cow's milk ; (4) limestone grit.

The test was continued until the chicks were 15 days old. Table I shows the average intake of dry matter by the two groups.

Table I.—Average Dry Matter Consumed ; Hatching—15 Days. Ounces per Bird

Food	Control Group	Experimental Group
National chick mash	5·90	—
Milk	—	0·61
Egg	—	1·95
Coarse miller's offals and cod-liver oil	—	2·11
Total	5·90	4·67

Between the sixth and 14th days 30 chicks died in the control group. There were no losses on the experimental diet. At 15 days the average body weights were 3·15 and 4·88 oz. in the control and experimental groups respectively, a difference of 35 per cent.

These two preliminary trials showed that mortality could be controlled by an improved plane of nutrition and the problem was now to determine in what respects the control mash was faulty. The analytical data for the control mash were not dissimilar to that of many pre-war starter rations which produced satisfactory rearability. On the other hand, the character of the foods included in the present mixture showed marked differences by comparison, more particularly in the cereal components. Yellow maize products comprised only 5 per cent. of the diet and that in the form of maize gluten meal, a medium protein concentrate. This fact, together with the absence of dried green foods in the mixture and reports to the effect that in some types of mash there is a rapid oxidation of the vitamin A in fish liver oils, raised doubts as to the sufficiency of this vitamin and its precursors in war-time diets. As a result of differences in milling, the quality of war-time offals has undergone a pronounced change, and it was thought that this may have resulted in a diminution in some important nutritional factor since it is well known that certain of the cereal vitamins are restricted to particular parts of the grain. In the control mash used in the present instance miller's offals amounted to 31·75 per cent. of the mixture and ground whole wheat 15 per cent. The only type of whole ground wheat which is permitted as animal feed is grain which has been certified for various reasons as unmillable and it seemed a reasonable assumption that the deterioration leading to its rejection may have concomitantly reduced its vitamin content. The comparatively unsatisfactory growth rate of the control mash-fed chicks in the initial experiments encouraged us therefore to explore possibilities of a deficiency of vitamin A or of growth-promoting fractions of the B-complex.

Three groups each comprising 100 day-old chickens, were used. Group A acted as a control and was provided with an *ad libitum* supply of the National baby chick mash. Group B was given free access to the control mash, to which was added beta carotene at the rate of 0·06 gramme per 50 lb. of mash, an amount which was calculated to provide approximately 2,000 international units of vitamin A per lb. of feed. This amount of carotene is adequate to provide a safety margin of 37 per cent. above what is regarded as the optimum vitamin A requirements of baby chicks.

It has been shown by Bolin *et al.*[1] that the growing chick can utilise carotene in the starter ration during the first two months of post-embryonic life and that it is not wholly dependent at that time on the reserves of carotene and vitamin transmitted through the egg yolk.

Group C was fed a mixture of 70 per cent. by weight of the control mash and 30 per cent. of a vitamin concentrate food prepared from wheat germ and rich in vitamin E, carotene (1·34 gm. per 50 lb.), thiamin and certain growth-promoting fractions of the vitamin B-complex.

All the rations were fed dry. During the period between the sixth and 14th days, 28 per cent. of the control group chicks died, 15 per cent. of the group receiving added beta carotene, and no deaths occurred in the third group receiving the wheat germ concentrate. The spectacular protection in group C we attributed to one of three possibilities :—

(*a*) A general increase in the metabolisable energy of the ration since the concentrate supplement formed practically one-third of the total dry matter consumed.

(*b*) Vitamins of the B-complex.

(*c*) Vitamins of the B-complex and carotene, as group B with added carotene seemed to indicate a partial protection in comparison with the control ration.

Lack of facilities prevented us from following up all three avenues simultaneously and unfortunately we gave *a priori* consideration to the vitamin concept which delayed the final solution.

In the subsequent series of experiments the following rations were fed, all of which failed to give protection compared with the corresponding groups fed the control mash alone :—

(*a*) Control mash + crystalline riboflavin (1,630 gamma per lb. of feed).

(*b*) Control mash + calcium pantothenate (equivalent to 6,350 gamma of pantothenic acid per lb. of feed).

(*c*) Control mash + 10 per cent. dried brewer's yeast.

(*d*) Control mash + 2½ per cent. dried grass.

(*e*) Control mash + 10 per cent. dried brewer's yeast + 2½ per cent. dried grass.

Post-mortem Findings

As previously mentioned, the *post-mortem* findings first drew our attention to the condition owing to the inconsistency of the changes which were recorded. Some batches of chicks from the field failed to reveal any significant findings, while in the remainder, the diversity of the organs affected and the varied pathology of these organs suggested that they were coincidental.

Abnormal changes were observed in the lungs, kidneys, yolk sac and leg bones, often in more than one of the above in the same chick, but in every batch submitted there was always a proportion which failed to reveal any naked-eye lesions at all. Because of this it was considered that many of the changes observed were secondary to the condition itself, and that the kidney and lung changes were probably associated with failing circulation prior to death.

The following table shows representative *post-mortem* findings from 100 chicks which had died during successive experiments and are taken from the control groups which had all been fed National chick mash. Deaths occurring in experimental groups where no protection was afforded by the addition of any accessory substance (yeast, riboflavine, carotene, etc.) showed the same diversity of findings and the same proportion of apparently normal chicks.

When only one finding was recorded, an unabsorbed yolk-sac was the commonest abnormality and the contents varied in colour from brick-red to a dirty greyish-green. This failure to absorb the yolk in the first few days in itself lends support to our ultimate conclusions.

Table II: Post-mortem Findings on 100 Control Chicks

Organ or tissue.	*Abnormality.*	*Percentage.*
Lungs.	Marked congestion	8
	Slight congestion.	16
(Owing to delay in some instances, a proportion of these may have been due to *post-mortem* changes.)		
Kidneys.	Congestion.	9
	Anaemia.	38
	Hypertrophy.	8
Yolk-sacs.	Unabsorbed, to a varying degree; Colour brick-red to greyish-green.	23
Leg bones.	Varying degree of abnormal "softness" similar to mild rickets.	14
Alimentary Canal.	Empty of food.	17
	(In the remainder the entire gut appeared normal and in no case was any inflammatory change observed.)	
Other organs.	No abnormal changes were observed in the heart, liver, spleen, pancreas, adrenals or reproductive organs.	
Parasites.	Routine examination from all batches failed to demonstrate the presence of coccidia or other parasites.	
Bacterial examination.	Cultural examination by smears from the liver, heart blood and bone marrow on to 1 per cent. Evans peptone—Lemco agar slopes and 1 : 10,000 brilliant green plates failed to reveal the presence of any micro-organisms.	

Field Investigations

During the spring of this year (1944) we were receiving from various sources for *post-mortem* examination, carcases of chickens between one and two weeks of age which had apparently died under similar conditions to those which have been described. We were also receiving reports from poultry advisers in several counties of similar cases and the poultry press were also suggesting that six-day disease was widespread. We decided, therefore, to circularise the accredited breeders in the West Midland Advisory Province by a written questionnaire which was designed to furnish us with the following information:—

(*a*) To what extent the trouble had been experienced.

(*b*) The rate of mortality among chicks during the first 14 days after hatching and between the sixth and fourteenth days.

(*c*) Methods of feeding young and adult stock, including the composition of the rations.

Completed returns were obtained from 55 farms. Of these, eight farms had averaged during the current hatching season over 10 per cent. deaths in chickens during the first 14 days after hatching, and the remaining 47 farms below 10 per cent. Of the latter number, 34 farms were using for chick feeding, from the time of hatching, grain of various types in addition to mixed mashes. The chicks on the eight farms with over 10 per cent. deaths in the first fortnight had been fed all-mash diets with no addition of grain.

We visited all the farms where the heavy losses were occurring and confirmed that the deaths were due to six-day disease and not to any other recognised causes. The mortality from the 6th to 14th day on these farms had been variable but had never been less than 20 per cent. in an individual batch of chicks and had been as high as 80 per cent. in some lots. One farmer had sold his entire poultry stock on account of the disheartening losses he had sustained. Four of these eight farmers had started to use a little cut wheat in addition to the mash for the later broods of chicks and were finding this protective. We also had the opportunity of examining samples of the all mash chick diets being fed on some of the 13 farms where less than 10 per cent. deaths were averaged and in all cases this appeared to us to be superior in texture and flouriness to the usual war-time sample of baby chick mash we have encountered. The following variety of individual and mixed grains had been fed to the chicks on the 34 different premises experiencing satisfactory rearing: Tail and cut wheat; pinhead oatmeal; crushed oats; maize grits; cut wheat and maize grits; cut wheat, beans, oats and barley; crushed oats and cut wheat; crushed oats and split peas; cut wheat, rye and barley.

The broad results of the questionnaire and field enquiry indicated:—

(1) Grain of varied types when fed from hatching as a supplement to chick mash confers a degree of protection against six-day disease in proportion to the amount fed.

(2) Of the farms where all-mash diets only were being fed, those which had experienced no severe incidence of chick mortality were feeding a superior mash as judged by the quality of the samples we inspected.

(3) Where six-day disease had occurred no grain of any kind had been fed.

Although just over 14 per cent. of the farms included in this survey had encountered the disease, this does not signify that the condition is not widespread over the country, since many of the poultry units included in the above were either part of a mixed farm or had ploughed out part of their land and sown mixed corn. In suburban areas of the country the proportion of poultry farmers having access to grain would certainly be less.

Further Experimental Work

As a result of these new observations we immediately instituted a fresh series of experiments using chickens from two of the farms included in the survey where consistent trouble from six-day disease had been experienced. The chickens from each source were subdivided into five feeding groups with the following results:—

Group	*Diet*	*% Mortality 6th-14th day*
A	Control baby chick mash.	21
B	A mixture of 30% by weight ground wheat and 70% control mash.	12
C	Ground wheat.	8
D	Ground oats.	48
E	Crushed oats.	8

All groups showed a degree of protection in contrast to the control with the exception of Group D receiving ground oats as their sole food.

The excessive death-rate in this group compared with group E may seem surprising, since both foods which were used are essentially the same in chemical constitution. Both samples of food were very poor in quality and produced from light weight oats, but the chicks receiving the crushed oats were able to discriminate between the starchy kernel of the oat and the fibrous husk and to reject the latter. Where the oats had been finely ground for Group D, the fibre was reduced to such a fine state of division that discrimination was impossible and the chicks' intake of fibre, possessing no nutritive value, was undoubtedly very high.

We were aware in this preliminary test that an all grain ration would eventually prove unsuitable on account of protein and other deficiencies and consequently in the following test we gave a group of chicks free access to crushed oats and control mash. Between the 6th and 14th days the deaths on this treatment amounted to 4 per cent. as against 24 per cent. in the control group fed solely on control mash.

The results of the latter two tests coupled with the information from the field, both indicating that grains of varied types used singly or in combination are equally effective in providing protection against six-day disease, suggested a common nutritive principle typical of all grains, rather than accessory factors which tend to predominate in individual grains. The only outstanding common factor in all grains is their richness in starch. We commented earlier in this paper that the control mash used in the experiments is not dissimilar in respect of principal chemical constituents to that of a pre-war chick starter mash and on superficial examination might be expected to yield similar nutritive results. In the chemical analysis of foods, however, the moisture, crude protein, ether extract, fibre and ash are directly determined and the remainder, which is described as soluble carbohydrates or preferably nitrogen-free extractives (N.F.E.), is obtained by difference. The percentage of N.F.E. thus depends upon the amounts of the other constituents present. Nitrogen-free extractives in animal foods consist principally of starch and hemicelluloses, the latter being substances intermediate in complexity between starch and cellulose (fibre) and comprise both pentosans and hexosans. The fowl relies on the starch of cereal grains and the meals made from them for the bulk of its energy requirements. The absence in war-time of maize and maize products and the shortage of grain have resulted in the bird's dependence on miller's offals for its chief source of energy. The necessary differences in milling brought about by war-time conditions have led to a more severe extraction of the starch from the grain which has consequently led to an increase in the percentage of hemicelluloses in the offals.

Thus, although a ration in which the chief source of energy is miller's offals may show on analysis the same percentage of N.F.E. as a pre-war ration the balance of constituents within this N.F.E. has undergone considerable change. The digestive system of the chicken is ill-equipped to deal with carbohydrates of greater complexity than starch and, therefore, any increase in the hemicellulose content of the N.F.E. will lead to a lowering in nutritive quality.

The well-defined onset and termination of fatalities in a group showing six-day disease and the symptoms at the time of death lend support to this view. Deaths occur from the 6th day when the maternal provision of energy through the yolk sac is exhausted and the chick becomes wholly dependent upon the external food supply. Affected chicks exhibit marked activity and some discrimination in their efforts to get sufficient nutriment from the food, and frequently die at the feeding trough. The termination of deaths at the 12th to 14th days is also characterised by its abruptness and presumably coincides with the improvement, through increasing age, in the food capacity and metabolism of the chick.

In our next test we attempted to confirm this theory of inadequate energy in the starter ration being responsible for six-day disease, and included a group in which 30 per cent. of the control mash was replaced by an equivalent weight of pure crystalline D-glucose. The feeding groups and results of this test were as follows:—

Group	*Diet*	*% Mortality (6th-14th day)*
A	Free access to control mash.	40
B	Free access to a mixture of 30% by weight of ground unmillable wheat and 70% control mash.	21
C	Crushed oats and control mash, both fed separately and *ad libitum*.	20
D	Free access to a mixture of 30% glucose and 70% control mash.	11

The immediate supply of control mash having been exhausted, we compounded, for this and subsequent experiments, a mixture in the same proportion of the foods used in the original control mixture with the exception that the 5 per cent. of palm kernel cake meal was replaced by an additional 5 per cent. of miller's offals.

The percentage chemical analysis of this new control mash was as follows:—

Moisture	11·00	Fibre	6·20
Crude protein ...	17·15	Nitrogen-free extractives	51·55
Ether extract ...	5·10	Ash	9·00

The mortality throughout this test was higher than previously experienced, but the comparative protection of the groups receiving additional whole cereal foods was still very marked in contrast to the controls. The result for group D confirmed our conjecture that six-day disease is due to a shortage of metabolisable energy since the only contribution that the substitution of control mash by D-glucose could make was by furnishing readily available energy. The commercial feeding-stuffs, crushed oats and unmillable ground wheat, both very poor in quality compared with pre-war samples, showed, as would be expected, less protection than glucose, for they supply less available energy per unit of weight.

We deliberately avoided using grains which were not readily available to the commercial feeder and we are of the opinion that an even greater degree of protection would have resulted if we had used superior quality cereal foods such as cut wheat or pinhead oatmeal.

At this stage of the work our attention was drawn to a publication by Taylor[2] in which he attributes six-day chicken disease to the inclusion of extracted palm kernel meals in excess of 10 per cent. by weight in chick starter mashes. He suggests that the solvent used in the process of extracting oil from the palm kernels leaves some toxic residue in the meal and the chicks die as a result of the chemical effects of this poison. Taylor cites trichlorethylene as being a more dangerous solvent than benzine and points out that the oil seed residue from the first extraction by a new supply of solvent is likely to be more harmful.

This interpretation of the cause of six-day disease could not apply in our experiments, since of the two control mashes used the first did not contain any extracted oil seed residues and only 5 per cent. of palm kernel cake meal, from which the oil had been extracted by pressure and not by chemical solvents. When the supply of this control mash was exhausted, we purposely replaced the palm kernel cake meal by an equivalent weight of miller's offals and despite the fact that this new mixture contained neither palm kernel nor any oil extracted seed residues, the death-rate from six-day disease amounted to 40 per cent.

Taylor, in his final experiment, substituted in four different feeding groups 20 per cent. of the wheat feed in the control mash by equal weights of (*a*) benzine extracted, (*b*) finely ground benzine extracted, (*c*) trichlorethylene extracted, (*d*) unextracted palm kernel meals respectively. Six per cent. of the chickens died on the control mash compared with 30 per cent. (benzine extracted), 28 per cent. (finely ground benzine extracted), 60 per cent. (trichlorethylene extracted), and 10 per cent. (unextracted). We are not satisfied that a genuine unextracted palm kernel meal was used for the latter group, since, although the same amount of palm kernel material was included in each of the four experimental rations, the analytical value given for the oil content of the mash containing the unextracted palm kernel is well below that of the diet fed to group (*c*) containing trichlorethylene extracted meal.

In our final experiment we repeated this test with certain modifications. Three types of palm kernel meals were used, all resulting from the same crush of palm kernels, so that any differences in initial composition would be avoided. These comprised (*a*) unextracted, (*b*) trichlorethylene extracted, (*c*) benzine extracted, and were used at the rate of 20 per cent. of the diet in substitution for an equivalent weight of the control mash. In addition, a further group was used to repeat the replacement of 30 per cent. of the control mash by an equivalent weight of D-glucose.

The percentage deaths from six-day disease between the 6th and 14th days were:—

Group A.	Control mash	44
Group B.	20 per cent. trichlorethylene extracted palm kernel	30
Group C.	20 per cent. benzine extracted palm kernel ...	39
Group D.	20 per cent. unextracted palm kernel	48
Group E.	30 per cent. D-glucose	7

The results of this test provide added confirmation that six-day disease is due to a deficiency of metabolisable energy in chick starter rations. The protective effect of glucose was even more marked in this experiment and several independent observers not familiar with the diets being fed, commented on the superior quality of the chicks in this group compared with the survivors in the other four lots. Of the three forms of palm kernel fed, the death-rate was highest in the group receiving the unextracted meal and the lowest mortality occurred on the mash containing the trichlorethylene extracted product. Differences in the numbers of deaths between the groups having palm kernel and between them and the control group on a ration containing neither palm kernel nor other oil seed residues, strongly suggest that solvents used in fat extraction are not directly or indirectly responsible for the trouble. We consider that the extensive use of palm kernel products of any kind in rations intended for baby chicks is undesirable. At high levels palm kernel reduces the palatability of the diet as a whole and the results of this test indicate that compared with a control mash itself deficient in available energy, the partial replacement by equivalent weights of palm kernel meal will not improve matters.

The control mash which Taylor used in his final experiment included maize and barley meal, ground oats and cheese pairings, and the low mortality (6 per cent.) may have been due to the mash containing adequate energy for the chicks' requirements. Where 20 per cent. of the wheat feed in this mash was replaced for the experimental groups by palm kernel meals, the corresponding increase in deaths was no doubt due to a reduction in the metabolisable energy content of the ration.

Summary

Experimental results supported by field investigations into the cause and control of six-day chicken disease provide the following conclusions:—

(1) The condition is due to a deficiency of available energy in all-mash chick starter rations. Several contributing factors are collectively responsible, namely, lack of whole grains and maize products, a deterioration in the composition of the nitrogen-free extractives of miller's offals and the inferior quality of other cereal products permitted for poultry feeding.

(2) The use of benzine or trichlorethylene in the solvent extraction of oil from palm kernels is not the cause of deaths from six-day disease, when the extracted meals are subsequently used in chick mashes. The use, however, of large quantities of palm kernel residues of any type is undesirable in baby chick rations since they are unpalatable and provide inadequate metabolisable energy.

(3) *Post-mortem* findings in chicks which have succumbed to six-day disease are negative in a large proportion of chicks and the marked feature of any *post-mortem* findings that have been noted during the course of the many tests has been the inconsistency of the organs which have been affected and the variety of changes in these organs, suggesting that abnormalities in one or more organs in any chick were coincidental and had in themselves no significance.

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RABIES INCREASE IN U.S.A.

According to U.S.A. Government reports, rabies was more prevalent in 1943 than in any year since 1937. During the year there were 33 human deaths from the disease in the United States and 7,348 animals succumbed to it. For the first time in more than a decade the disease was prevalent in Washington, D.C., being diagnosed in 104 dogs.

Commenting on this, *Veterinary Medicine* observes: "Deplorable as is the situation revealed by these reports, the real one is much worse, since reporting the disease in animals is largely on a voluntary basis and, particularly in animals other than the dog, is far from complete. Experience has shown repeatedly that rabies can be eradicated without difficulty from any country in which the dog is the sole natural reservoir of the infection—as is the case in this country."

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Weekly Wisdom

All society is founded upon a triangle of farming, clothing and building, and the base of that triangle is farming.—Clifford Bax, "Evenings in Albany."

Veterinary Education, with Special Reference to the Second Report of the Loveday Committee*

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Diseases of domesticated animals were first brought into systematic study in this country in 1791, when Charles Vial de St. Bel, a French veterinary surgeon who had been educated at Lyons, founded in London what is now the Royal Veterinary College. The course of study he introduced occupied three years, and a perusal of his syllabus reveals him to have been a man of broad vision, fully alive to the requirements of veterinary teaching, having regard to the knowledge possessed at the time as it referred to the horse. This man, however, was unfortunately to die some two years later, and the school he had inaugurated was destined to suffer a serious setback. The person appointed to succeed him, a surgeon named Edward Coleman, had had no practical experience of animal diseases, and the course of instruction was reduced to a period of about six months. He is reported to have held the view that grooms and the like were more appropriate material for veterinarians than were men of education and culture. The examiners comprised a Board of medical men recruited largely from his friends and cronies. Coleman was destined to have a profound influence on veterinary training for nearly half a century, for he continued to hold the reins in the London school until he died in 1839. In 1823 a second veterinary school was founded in Edinburgh by William Dick. Dick had been trained in London, obtaining his diploma in 1818. He was backed in his venture by the Highland and Agricultural Society, and it was for the diploma of competence issued by that body that Edinburgh students sat. Between the two schools there was great rivalry, and it would seem that the basis of this was largely competition for the attraction of students, for the schools were chiefly dependent financially on student fees.

Throughout those early years great antipathy existed in London between the school and its graduates, who were now practitioners. The latter, championed by such men as Bracey-Clarke, Youatt and Percivall, complained that the teaching in the school was both inadequate and incompetent, but it is probable also that personal jealousies played a part in the disagreement. Matters came to a head in 1844. Coleman was by this time dead and had been succeeded by William Sewell. A petition was made to the Government for a professional Charter of Incorporation. The schools and the practitioners had patched up their differences, and the seven petitioners composed three practitioners, Dick of Edinburgh, and Sewell, Spooner and Simonds of the London School. The Charter was granted and thus to-day the College celebrates its centenary. By it, graduates of the two schools were formed into a body corporate with the title "Royal College of Veterinary Surgeons." Provision was made for the government of the profession, and for the examination of students of the then existing schools and of such other schools as might in future be affiliated to the College by Royal Sign Manual, for their admission as members of the R.C.V.S. Thus the one-portal system was born. It was the outcome of a concerted effort to control abuses in the schools by the introduction of an examination standard. But trouble was by no means over. The Queen's signature on the Charter was hardly dry when Dick withdrew. He accused the College of introducing material of which he was not cognisant when signing the petition, and to make matters worse the College included in its delegates sent to the first examination in Edinburgh, a teacher from London who promptly submitted an adverse report. Thus for the remaining years of Dick's life Edinburgh students were to sit for the certificate of the Highland Agricultural Society, and it was not until 1879 that unity was restored. By this time other schools had become affiliated. In 1857 John Gamgee opened a second school in Edinburgh, but eight years later it was transferred to London, where it soon became defunct. In 1863 James McCall founded the Glasgow Veterinary College, which has flourished ever since. In 1873 William Williams opened the New Veterinary College in Edinburgh in competition with the now 50 years old Dick School. Williams' school had considerable success and continued until 1904, when its then Principal, Owen Williams, son of the founder, transferred it to this city, where it became part of the University. The Dublin school was founded in 1900.

The Charter of 1844 stands to-day: only those who have satisfied the examiners of the Royal College of Veterinary Surgeons may practice as veterinary surgeons in this country, and it is the recommendation made by the Government Committee on Veterinary Education that this one-portal system shall now be modified that has stimulated this discussion this afternoon.

Let us consider in some detail the position of the Royal College in relation to education. It determines the subjects, the order and the standard of examinations and appoints the examiners. It has no direct control over the schools. It does not prescribe their curricula nor has it power to inspect their teaching facilities. It cannot disaffiliate a school in which in its view the standard of teaching is inadequate. It must be conceded, however, that by its power to reject candidates who do not satisfy its examiners' requirements, it exercises a profound influence over the standard of veterinary teaching. Its powers are exercised through the medium of the Council, a body of 32 (I exclude Irish representation) Fellows or members of the College, elected by the vote of the whole profession. The schools have no direct representation on the Council, but it happens that teachers offer themselves for election and are generally elected; nor has the Government or outside educational body representation. At the moment the Council comprises 20 practitioners or retired practitioners, five teachers and three retired teachers, and four research workers.

There is no doubt that at the time the college was founded, weaknesses and abuses existed in the schools, and it is quite evident that during the century the college has had control professional education has made sure and salutary advance. The Council has been deeply sensitive of its responsibilities, and it would ill become me at this time, when it is proposed that our educational system shall undergo fundamental changes, to withhold the praise so deservedly due to those of our colleagues who, during the past 100 years, laboured unceasingly to raise our educational status. The course instituted in 1844 occupied two sessions only, with a practical examination at the end. When you recall that this was before the days of Pasteur, Koch, Cohnheim, Simpson, Lister, Theobald Smith and many of the other outstanding figures in the development of medical science, you will appreciate the limitations of knowledge at the time, but there is no doubt that the graduates of those days were expert anatomists; that they had no mean knowledge of physiology, and they were skilled surgeons. In 1873 two examnations were instituted—one at the end of each session, while in 1876 the course was extended to three years with three examinations. In 1888 pre-entry educational requirements were introduced. In 1895 the course was extended to four years and pathology was included as a separate examination subject. Thirty-seven years later, in 1932, the present five years' course was instituted.

The great strength of the one-portal system lies in its power to guarantee a minimum examination standard. Has it any weaknesses? A minimum examination standard may be a negative virtue for it entails a grave risk that it becomes the maximum education standard. You will appreciate that the knowledge with which the new graduate is armed, his outlook on scientific and professional matters, are the outcome of the five or more years of training he has received in the school, and not of the examinations, for the latter at best only scratch the surface of his knowledge (or lack of it). They are influenced by many factors which seldom engage the attention of those discussing education, not the least of these being the temperaments of both the student and the examiner. The charge has also been made that if a school is weak in any particular subject or subjects the system encourages cramming. In this connection I would comment that the quality of a school should not be measured in terms of the percentage of passes it obtains in outside examinations, in which competition is an inevitable factor, but by the work its graduates do in their subsequent professional life and by the contributions its staff make to the advancement of our science.

A further weakness ascribed to our present system is that there is a great dearth of men suitable for and available as examiners, particularly in the vocational subjects. Teachers are precluded other than in the modest capacity of internal examiners in their respective schools; they have no say in the setting of papers; while councilmen are entirely banned. Yet it may be held that in a small profession such as ours, the best men lie within these groups. One cannot eliminate the impression that a spirit of distrust of teachers has continued to pervade our profession, but the exclusion of councilmen is beyond my comprehension. If we follow up this charge more closely we are compelled to acknowledge its justice, for one finds that individual examiners have served for very long periods—in fact, in 1943 one of the examiners in anatomy had been serving continuously in that capacity for 38 years—and that the important subject of animal husbandry was in no small measure dominated by an examiner who acted for 46 successive years up to 1937. Likewise the outlook in surgery was in measure controlled by an examiner who served for 30 years up to 1937. The men referred to were of the highest integrity and were shining lights in our profession, yet it cannot be gainsaid that such a state

* Presented in opening a discussion at a meeting of the Lancashire Division, N.V.M.A., at Liverpool, June 30th, 1944.

of affairs is likely to have a profound effect on our educational outlook and that the system warrants investigation. The shortage of examiners is as acute to-day as at any time and frequently makeshifts have to be made. Under our system, examinations occupy three full weeks twice a year and it might well be asked, how many are there who would make suitable examiners who can spare this time from their work? Let us consider the task of those who can. For three weeks all their wakeful hours are occupied in marking papers, conducting oral examinations, or travelling by train, motor, ship or aeroplane. That they are able to carry it out speaks well of both their physical and mental powers. But the point is, are such conditions conducive to the best examination system?

The Loveday Committee was deputed by the Government to enquire into our educational system. The argument has been advanced that in the first instance they exceeded their terms of reference, but that it was the Minister of Agriculture's intention that they should explore the existing state of affairs from top to bottom, is, I think, proved by the fact that they were instructed to re-assemble during the war.

On reading their reports I cannot but acknowledge the great sympathy with our professional aspirations they have shown; and they have been appreciative of the efforts and advances the profession has made in the past, and that they are fully alive to its potential increase in usefulness to the country in the future. That they were well aware that the weaknesses in our schools were chiefly caused by a chronic shortage of money is evidenced by the very large grants from the national exchequer they recommend be expended on them. I suggest that the least we as a professional body can do is express our gratitude for this understanding.

Let me refer briefly to those of their recommendations to which exception may be taken. The first is the proposed reconstitution of the Council of the College. I have already spoken of its present make-up. We must ask ourselves, is it in the best national interest that the rank and file of the profession shall have the whole say in the control of professional education? Most members, like myself, were brought up in the isolation of their own particular seminary and have little or no knowledge of other systems of education. The Loveday Committee holds the view that the schools and the universities should have the right to representation to the number of twelve, these members to be veterinary surgeons. Furthermore, they recommend that the Crown shall have four representatives who need not be veterinary surgeons. We must consider whether such representation would strengthen the Council in so far as its work in relation to education is concerned, and would the inclusion of Crown representatives assist it in appreciating more fully the requirements of the State Service. Is it not possible that by such representation the Government might come to a better understanding of our usefulness and the problems and difficulties with which we have to contend? And would it not engender a more sympathetic attitude towards our profession? These are points which merit the most careful consideration.

The second recommendation to which I will refer is the provision of a Field Station as part of each school. Each of you will recollect your own college training and will form your own judgment as to how adequately you were armed to tackle the problems agriculture has since presented to you. If it is conceded that the recommendation is a wise one, then the Committee must be given credit for originating the idea. In this connection it is significant to comment that the outlook of those responsible for the rebuilding of the Royal Veterinary College during the period 1930–37, was such that about £300,000, half of which was national money, was expended on bricks and mortar in Camden Town.

The third controversial recommendation is that there shall be an increase in the number of schools. The Committee received evidence from authoritative sources that the number of veterinary graduates must in future be increased and they had to decide whether the existing schools should be enlarged or new schools created. Those of you who have recently graduated from the larger schools will recall the size classes have already attained and you will have formed your own opinion as to whether or not the numbers in them adversely affected teaching, particularly clinical teaching. But there is another point in relation to increasing the number of schools I would ask you to consider—the opening up of more nurseries for young teachers (and here I refer not only to teachers in the strictly vocational subjects) and the improvement in prospects for teachers it would afford. I would like to see a system whereby it was customary for our teachers to move, progressively up the scale, from one school to another. Such movement would have a most salutary effect on their experience, outlook and teaching ability. You must agree that the basis of good teaching lies with the man and that no matter how elaborate the buildings or how great the potential facilities, without the men they are of no avail. A system must be developed whereby we attract more and better men to teaching.

If the number of schools is to be increased, then it would appear logical that the new schools be associated with universities, for the day of the private veterinary school is over. Here we come to the real bone of contention in the report—if more universities undertake veterinary teaching shall they be allowed to institute qualifying degrees? If they are, then as I see the matter, the one-portal system is broken. Recent events have shown that the majority of the profession oppose such a change. A great deal has been written and spoken on the subject, but I feel compelled to state that I have seen little by way of constructive argument advanced in favour of this opposition. What are its foundations? Is it that the profession resents any interference with a system over which it has absolute control? Is it that there are justifiable fears that such a change will lower the standard of education? If it is the first of these motives which actuates opposition, then I think no further discussion is necessary, other than to comment that we must remember that the Committee was set up to consider what was best for the national interest and not what was best in the interes of the profession as it exists to-day. If, however, it is upon the second point that resistance is based, then I believe there are ample grounds for debate.

The little experience I have had as a member of the staff of a university has impressed upon me that the university's chief interests are the education of students for the degrees it awards and the development of research. It is most jealous of the high standard of those degrees and would not tolerate any attempt to lower it, and it is as proud of and eager for the future of its veterinary graduates as those of any other science. The method of examination is that the senior teacher in the subject acts as one examiner and some external person acts as the other. Every effort is made to select the best man available as the external examiner; he may be a teacher from another school, he may be a research worker or he may be a clinician. In his selection the Senate is guided by the advice of the Faculty or Board concerned. It is the duty of the internal examiner to have in mind at all times the prestige of the degree. Is it likely that the standard thus set will be lower than that which prevails in the system I have previously described? Is there evidence that the universities by instituting qualifying degrees have lowered the standard of medical education? From enquiries I have made I am given to understand that the opposite is the case; that the degree represents the highest standard, one considerably higher than the legal minimum of qualification required to practise, and that the so-called backdoors into the medical profession are the diplomas of a number of ancient non-teaching bodies who have long possessed and still maintain the right to award them.

Who is it in the universities who would wish to lower the standard? Is it suggested that it is the professors in the various scientific subjects, men who are leaders of thought and research in their respective subjects? My own experience is that they will insist that the standard required for veterinary degrees shall be the same as that required in the other sciences. Is it not likely that if more of our graduates had the opportunity of studying under men such as these, it would have a broadening effect on our outlook. If my premise is sound, then it must be the veterinary teachers in the universities, men of our own profession, who will lower the standard. I have sufficient confidence in our profession to believe that those employed by and surrounded by the university environment, would strive also to improve standards. It may be argued that the universities, who it is proposed shall undertake veterinary teaching, will not have facilities for so doing, but we must remember that it is only suggested that they shall do so providing money to a tune hardly comprehensible to veterinary schools at the moment is forthcoming. If a capital grant of £181,000, and a recurring annual grant of £25,000, becomes available to each of them, and men cannot be found to fill the posts, then I construe this as a further argument for altering our system. Finally, one of the strongest arguments advanced by those who oppose this recommendation is that the universities will lower the standard of the practitioner turned out. I do not share this fear. But I would go further; I do not believe the turning out of practitioners to be the be-all and end-all of veterinary teaching; in fact, I think it will become less and less important as the years go by. I visualise great changes in the translation of veterinary science to agriculture occurring in the future, and believe the schools will have to concentrate more and more on the production of specialists in hygiene, preventive medicine, animal husbandry, gynaecology, etc.

But far from grudgingly admitting that universities might be allowed to introduce qualifying degrees in veterinary medicine, I would urge that they be encouraged to do so. The degree is the international unit of advanced education. It is significant that it has been adopted for veterinary education in the young countries, the United States, and the Dominions. I believe that a degree should be available to all our students who have the ability to obtain it, without further cost or prolongation of study. Moreover, I consider our course in its intrinsic form to be worthy a degree

Our attitude in this matter reflects the estimate we place on the educational status of our subject. At the moment degrees of three universities are available to veterinary students. Those of Liverpool are in veterinary science, and the course for the Bachelor degree runs almost parallel with that of the diploma, vocational subjects being included. Those of London and Edinburgh, however, are degrees in science and exclude the strictly vocational aspect of our teaching. Let us consider the position with regard to these latter universities. Between the years 1906 (when the degree was instituted) and 1937, 39 only took the B.Sc. degree of London, yet during that period, at a conservative estimate, 1,000 students graduated from the London school. The Edinburgh figures are a little higher. I do not propose to discuss at length the reasons for this. In many cases it is likely that the students, or their parents, did not appreciate the academic advantages a degree would confer, and thus did not commence the course, and there would appear to be little evidence that the schools encouraged them to do so. From my experience as a teacher for some 14 years in the London school, I know that many of our best men did not enter on a degree course. Some of them have since taken up teaching and research careers, and I venture to suggest that it is to them a matter of profound regret that they do not possess a degree which would enable them to take higher degrees in their own or other universities. I am of the view that to stimulate the interest of the universities in our science would do much to increase its status and I know no better way of doing this than by encouraging them to take part in veterinary teaching.

In conclusion, allow me to say that in considering this matter we must be mindful of our great responsibility to the future members of our profession. We must ask ourselves seriously, does it follow that what was best in 1844 is equally good in 1944? Let us be quite sure that by adherence to tradition we do not apply a brake to professional advancement. It is our frequent and just complaint that we do not receive the consideration which is our due in matters pertaining to agriculture and animal health. Is our insularity the cause? Numerically we are small; ought we not to make up for our deficiency in stature by the breadth of our contacts?

"There is a tide in the affairs of men,
Which taken at the flood leads on to fortune."

I believe such a tide has risen in our affairs. Let us be quite sure that 50 years hence it will not be held that what we are so loudly proclaiming to-day to be our birthright has not in fact turned out to be our birthmark.

SCIENTIFIC METHOD IN LITERATURE

Sir Edmund Spriggs, for his recent Harveian Oration, spoke on "The Harveian Method in Literature." He explained that the method introduced by the great William Harvey meant essentially the use of observation and experiment guided by knowledge and by thought as opposed to thinking or accepting what others have said without the control of looking or thinking. Bacon as a contemporary of Harvey (and his patient) played an important part in the development of the new outlook; nor must Harvey's own work as a writer in the purely literary sense be ignored. In the language used it is possible to detect that Harvey was a child of the generation that produced the Authorised Version and Shakespeare. Turning to the influence of Harvey upon his successors, Sir Edmund Spriggs emphasised how imaginary romances came to be replaced by studies of human nature and of real incident. Not a few of the writers were doctors or medical students or had been closely influenced by relations in the medical or scientific professions. Tobias Smollett was the first of the English doctor-novelists, and Oliver Goldsmith had an intermittent medical education. In Germany Goethe had taken scientific subjects in his student course, and Schiller was a medical man. In France the scientific method in literature dated from the encyclopaedists. Stendhal had a medical grandfather, and Flaubert was a medical student and a son of a doctor. In modern times there was the striking example of Conan Doyle in a field in which scientific accuracy was essential, and in the general field Somerset Maugham takes a high place among living novelists with scientific or medical knowledge.

[For the first time in its history the Royal College of Physicians of London has held its St. Luke's Day celebrations outside the capital, and a large gathering of medical men and women attended the Royal Infirmary, Manchester, to hear the annual oration.]

CLINICAL COMMUNICATION

Cases of Convulsions and Deaths, of Unknown Aetiology, in Pigs

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Subjects.—Large white pigs, varying in age from 16 to 20 weeks.

History.—Two outbreaks having similar features are described. Both were encountered in piggeries well isolated from any dwellings. Both were about a mile from habitations and depended on swill from American camps for their maintenance. This was collected daily, was always fresh and was of high quality, containing scraps of ham, Spam, fish, offal and dried eggs as well as the usual bread and potatoes. On cooking, a thick layer of fat rose to the top and was skimmed off as completely as possible. Both outbreaks occurred during spells of very hot, dry weather. In case (1) only one or two animals were affected at the same time and in different pens. The mortality was three out of nine affected. In case (2) all the pigs affected had received their food from one out of nine 40-gallon containers. Pigs receiving food from the other eight containers the day before the first visit behaved normally. For about a week following the first outbreak of case (2) there was no death and hopes were entertained that the outbreak had spent itself, but a recurrence took place and (whereas in the first instances the recoveries were common) the mortality rate increased progressively. In all, some 30 animals died, the remainder being sent for emergency slaughter.

Symptoms.—The affected pigs, all of which were in fair condition, suddenly began to champ their jaws violently; the body becoming rigid and the head turned to one side, saliva soon dribbled from the mouth. The spasm usually lasted three to four minutes and was generally induced by a shock such as the arrival of a stranger, or by violent chivvying round the pen. The animals usually fell on their sides and, after slowly relaxing, recovered and remained docile in a corner. Some cases showed marked respiratory distress in the early stages of an attack. Temperatures were variable but seldom high.

Post-mortem Examination.—Only very slight inflammatory changes were to be seen in the stomach and duodenum and in some cases there were a few petechiae on the heart.

Chemical Analysis.—Stomach contents were sent for chemical analysis and material taken for bacteriological examination. Whilst the latter revealed nothing, all cultures remaining sterile, the chemist's report was as follows:—

	Heavy Metals.	Other Substances.
Pig 1 stomach contents ...	Nil ...	Trace of nicotine.
Pig 2 " " ...	Nil ...	1 grain of nicotine.
Small intestine	Nil ...	Trace of nicotine.

Analysis of swill sample

	% original.	% dry matter.
Moisture	75·85 ...	—
Crude protein	5·82 ...	24·12
Ether Extract	7·82 ...	32·81
Carbohydrates-Fibre	9·78 ...	40·05
Ash	0·73 ...	3·02
"Amides"	0·15 ...	0·61

Acid value of fat extracted from the swill: 17·92 mg/g.

Observations.—Though the acid value of the fat was high the sample appeared quite wholesome. It was, however, high in proteins and fat as one would have expected from its appearance. The chemist suggested that it would be an advantage, in view of his findings, to supplement the swill with more bulky food.

Many suggestions were made as to the possible cause of death, *e.g.* (1) Botulism, (2) Solanin poisoning, (3) Poisoning from the products of bacterial decomposition of the swill due to inadequate cleansing of the vats, (4) Sunstroke, (5) Salt poisoning, but none of these was confirmed, or in fact fitted the picture adequately. If it had been (1) it is surprising that the outbreak continued for so long and had not occurred before, since the swill did not appear to have changed or be any less fresh since the time it was first fed, *i.e.*, since the camp swill was first procured. One cannot, however, overlook the possibility of some defective meat products getting into the consignment. (2) Traces of solanin were found but in insufficient quantities to account for the marked symptoms. (3) Seems to be a possibility though unlikely and difficult to prove. Vats were, however, frequently interchanged and cleaned. (4) It is possible that this was the predisposing factor as the weather was remarkably hot and dry and conditions in the pens were very

oppressive. (5) The chemical analysis of the swill does not suggest that an excess of salt could be regarded as having anything to do with deaths and the views of Slavin and Worden[1] expressed in this journal suggest that this is unlikely. The only positive finding was nicotine and the amount found by the analyst in the one instance, namely one grain, was considered as sufficient to produce symptoms. One would have expected traces to be present in any case since cigarette ends seem to get into swill inevitably at some stages. Nevertheless it was felt at the time that the solution was reached. Deaths continued spasmodically over some weeks finally appearing in hitherto unaffected batches receiving swill from other containers. At this stage the owner took perhaps the wisest step and sent the remainder for emergency slaughter. Sixteen were condemned as unfit for human consumption as their flesh was said to be fevered.

Up to the time of the second outbreak any possibility of a deficiency of, say, vitamin A or of mineral had been dismissed, the onset of symptoms being thought to be too sudden, but later the view was expressed by certain biochemists working on pig nutrition that such might have been the case. Though they felt a deficiency of vitamin A could not be ruled out a mineral deficiency was more likely. If a mixed mineral mixture had been given before the pigs were slaughtered subsequent loss may have been prevented, but the suggestion was expressed too late.

This undiagnosed set of cases is recorded on account of the very marked and characteristic symptoms portrayed and the well-defined conditions under which they occurred. Further, it is hoped that practitioners who have had similar experiences may have reached a conclusion and have some suggestions to offer. If not, then the airing of the subject may be helpful.

Acknowledgments.—I should like to express my thanks to Mr. A. E. Martin, of the Advisory Chemistry Dept., University of Reading, for his help in carrying out the chemical analyses, and to Mr. E. Gill and Mr. J. B. White, veterinary surgeons.

Reference.—[1] Slavin, G., and Worden, A. N. (1941.) *Vet. Rec.* **53**. November 29th.

ABSTRACTS

[Recent Advances in Prevention of Blowfly Strike in Sheep. Joint Blowfly Committee, Coun. Sci. and Indust. Res., New South Wales and Queensland Depts. Agric. (1943.) *Bull.* 174.]

This is a supplement to Report No. 2 of the Joint Committee appointed by the Council for Scientific and Industrial Research, New South Wales and Queensland Departments of Agriculture. The recommendations made concerning jetting in Report No. 2 are unaltered, but new information is given about some of the preventive measures and about treatment. The work done refers mainly to Merino sheep kept under Australian conditions, and may not have the same application to other sheep. Preventive measures are based on the reduction or elimination of inherent predisposition, immediate susceptibility and the abundance of primary blowflies. Reduction of inherent predisposition can be attempted by selection and breeding of less predisposed types. Sheep predisposed to body strike show one or more of the following features: slack open fleece, especially over the withers, wool lacking in quality as indicated by the handle, character and yellow colour of the yolk, "pinch" behind the withers, high shoulder blades, broad withers with depression between the shoulder blades. Sheep predisposed to crutch strike show excessive loose skin and wrinkles in the breech. Those most predisposed are largely undesirable for other reasons, such as lack of uniformity, poor fleece and poor constitution. Most Merino sheep are moderately predisposed to crutch strike. Predisposition can be reduced or eliminated by tightening and smoothing the skin of the breech by a modified Mules operation which is described. This gives permanent results. Excessively short tails increase the predisposition to crutch strike. At docking attention should be given to leaving adequate length. Short docking should be avoided. A tail left long enough to reach the tip of the vulva or just a little lower affords a definite measure of protection against crutch strike. Jetting with arsenical preparations can keep crutch strike under control, but measures to reduce predisposition should be used also. Shearing and crutching are also essential. Special precautions have to be taken to protect the heads of Merino rams from strike: removal of the wool round the horns is valuable, supplemented by dressings containing boric acid or arsenic. Bacterial disinfection of wounds helps to avoid strike. A repellent dressing can be applied. The formula given is 10 parts by weight of oil of citronella, 10 of soft soap and 80 of water. Dissolve the soap in 50 parts of the water and heat almost to boiling. Then add the citronella *slowly* while stirring. Cover to prevent loss by evaporation and keep warm until the preparation becomes transparent and syrupy. Then add the rest of the water. Reduction of the number of flies can be effected by preventing their breeding in live sheep, *i.e.*, by reduction of predisposition of sheep, early treatment of maggots and efficient disposal of carcases. Trapping has little value.

For treatment, two improved dressings are described, called B.T.B. and B.K.B. B.T.B. has proved excellent. It consists of boric acid 15 parts by weight, 2 parts by weight of equal parts of creosote and kerosene, 3 parts by weight of bentonite, 0·5 part by weight of Agral 2, and 79·5 parts by weight of water. B.K.B. consists of the same proportions of boric acid, bentonite and Agral 2, with 20 parts by weight of a mixture of kerosene 9·3 parts, lysol 5·3 parts and orthodichlorbenzene, 5·4 parts and 61·5 parts by weight of water. Agral 2 is a wetting agent supplied by I.C.I. Processed bentonites of American origin were found best. B.T.B. acts more slowly than B.K.B. and both are non-irritant and leave a deposit of boric acid which will prevent re-strike. B.K.B. may not be available for some time.

[Since D.D.T. is apparently very effective against the house fly and other insects, trials of it for the treatment of strike should be interesting.] G. L.

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[A Specific Arthritis with Pericarditis Affecting Young Horses in Tasmania. Rainey, J. W. (1944.) *Austral. vet. J.* **20**. 204-206.]

The author has noticed a high incidence of cardiac disease among farm horses in the Tasmanian foothills, and he describes some cases of pericarditis in young horses which might possibly account subsequently for the cases of sudden death from heart-failure noted there. The disease in young horses is probably widespread in Tasmania, and appears to occur chiefly in the foothills. Six cases (two of which were fatal) are described in detail. The disease is characterised by a high temperature, accelerated respirations, rapid pulse, a pounding heart action, and severe lameness of the shoulder and stifle joints, generally of the near side. At autopsy, a purulent pericarditis was found in the two fatal cases, and in one of them the affected joints were opened and found to contain pus. *Str. faecalis* was present in one case, in the other a short-chain streptococcus.

The disease could be confused in its early stages with pneumonia or laminitis. If the animal was taken off work as soon as definite symptoms appeared, recovery was likely to follow, and the use of sulphonamides would appear to hasten recovery.

E. C.

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[Poultry Meat Inspection. Lynn, E. M. (1944.) *J. Amer. vet. med. Assn.* **104**. 206-7.]

In the U.S.A. the market fowl is classified as *live* poultry, *dressed* poultry, *drawn* poultry and *eviscerated* poultry.

"Drawn" poultry is a fowl carcase from which the internal organs, head, shanks and crop have been removed and is offered for sale without expert examination. "Eviscerated" poultry is the carcase of fowl which has been examined under certain Federal regulations and afterwards cooked or frozen solid. Proper supervision and inspection of *live* and *dressed* poultry is a remote prospect and poultry meat inspection is apparently limited to a small percentage of the total amount that passes through the few eviscerating plants which maintain a proper meat inspection service under government supervision. This service is conducted by 100 veterinarians working under a director from the United States Department of Agriculture.

In the Chicago region such firms as Libby, McNeill and Libby, the Campbell Soup Company and others are engaged in promoting this enterprise. Sixty-five other plants under similar inspection are scattered from coast to coast.

Certain municipalities, it is true, enforce regulations ensuring proper inspection but, taking the country as a whole, of an estimated poundage of poultry consumed, *viz.*, 1,755,000,000, only 100,000,000 pounds were subjected to an efficient type of examination. In other words, the American public consumes 1,655,000,000 pounds of uninspected poultry annually.

Lynn stresses the point that, considering the fact that poultry, especially chickens, have a high morbidity and mortality, the figures show how essential it is to develop an efficient poultry inspection.

The retail price of eviscerated poultry properly examined is somewhat higher than that of other classes of market poultry, but

since the head, part of the neck, feet, shanks, crop, etc., are removed and the nutritional value is higher, the difference in price is not startling. H. F. L.

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[**Treatment of Breast Cancer with Testosterone Propionate.** A Preliminary Report. Fels, E. (1944.) *J. clin. Endocrinol.* **4**. 121-125.]

Three cases of mammary cancer in women all showed clinical improvement following administration of testosterone propionate. One patient with widespread metastases in the bones showed very striking improvement and was able to leave her bed after having been bedridden for 18 months, during the last four months requiring large daily doses of sedatives. It is not claimed that in any of the cases a cure was obtained but merely that striking relief from clinical symptoms occurred. E. G. W.

REVIEW

[**Animal Breeding.** By A. L. Hagedoorn, Ph.D., Privaatdocent, State University, Leiden, with a foreword by John Hammond, M.A., D.Sc., F.R.S.; reprinted 1944 by Crosby Lockwood & Son, Ltd., 20, Tudor Street, London, E.C.4; 304 pp., 15 plts., 8 figs., price 15s. net.]

This is a reprinting of a volume which first appeared in 1939, and which has been out of print since 1941. It is not a text-book of genetics in the same sense as is J. L. Lush's *Animal Breeding Plans*, reviewed in our issue of September 9th (**56**. 332), but is intended as an exposition of modern genetical concepts written specifically for "the breeders themselves." In the space of only 300 pages, a wide range of topics is covered in 36 chapters, *viz.*, "The role of the geneticist in animal breeding," "Animal breeding compared with plant breeding," "Heredity," "Variation," "Mutation," "Sex inheritance," "Domestication," "Adaption," "Improved breeds and local breeds," "Aims in animal breeding," "Importation," "First generation hybrids," "Grading up," "Adding one gene to a breed," "Lethal factors," "In-breeding and out-breeding," "Uniformity and purity," "Test-mating," "Correlation," "Constitution," "Herd-books," "Selection for production," "Tests and trials," "Progeny testing," "Pedigree," "Nucleus scheme of pedigree breeding," "Government activity," "Artificial insemination," "Breeding for the shows," "Influence of the show-ring," "Disease resistance," "Telegony," "Scientific investigations," and two chapters on the "Breeding of special groups of animals." The last two chapters comprise notes on the breeding of the horse, mule, donkey, ox, pig, sheep, dog, cat, various rodents, cagebirds, ostrich, food-fish, honeybee and silk-worm.

With such a mass of facts to discuss, the treatment is necessarily brief and dogmatic, but despite the handicap of writing in a language foreign to his own, the author has succeeded in presenting a stimulating work. As might be anticipated in the case of a much travelled scientific worker, Dr. Hagedoorn is happier when writing idiomatically than when he adheres to more orthodox English usage, with results that are at times amusing but at others irritating. In a second edition, certain sections, *e.g.*, the matter on pp. 60-61, which reads like an advertisement, should be corrected from this point of view.

It is refreshing to see the respect paid to both nutrition and disease by a geneticist, but many of the statements would have benefited from prior submission to an expert nutritionist or veterinarian. The actual chapter on disease resistance is one of the least satisfying, and elsewhere (p. 86) the effects of high milk-yield or egg-production upon constitution are all too lightly dismissed. The show-ring, however, is dealt with forcibly from the same aspect as that recently put forward editorially in our columns (August 12th. **56**. 294), and the limitations of breeding practices developed before the science of genetics came into being are clearly exposed. The many references to the importation of stock are worthy of study by those in the Colonial Service, and few will quarrel with the author's dictum that "*There is only one real measure of superiority in domestic animals, i.e., adaptation to the conditions of agriculture into which the breed must fit.*"

No one interested in farm livestock could fail to be absorbed by this book, and always provided it is followed by better documented lectures it may be recommended to veterinary students prior to their courses in animal breeding and genetics. The practitioner also will find in it the first suitable work of its kind since Christian Wriedt's *Heredity in Livestock* was translated into English by Professor R. C. Punnett.

QUESTIONS IN PARLIAMENT

Pig Swill (Processing)

Mr. Turton asked the Minister of Agriculture whether he will introduce regulations to secure that all swill from military camps and large catering establishments must be properly processed before being fed to pigs.

The Parliamentary Secretary to the Ministry of Agriculture (Mr. T. Williams): As my right hon. Friend stated in his reply to my hon. Friend the Member for West Perth (Mr. Snadden) on October 5th, arrangements have been made in the great majority of the large urban areas for the central processing of as much swill as possible, including swill from many catering establishments. Swill from many military establishments which are within a reasonable distance from a central processing plant with adequate capacity is being treated at the plant, but after thorough investigation with the War Office it has been found impracticable under war conditions to make arrangements for the processing of all swill from all military camps.

Mr. Turton: Is my right hon. Friend aware that, since that reply was given, outbreaks of foot-and-mouth disease have become frequent, and that the position is now grave? What action will he now take to prevent further outbreaks of the disease?

Mr. Williams: My right hon. Friend is aware that outbreaks of foot-and-mouth disease have taken place, but is of opinion that further regulations are not required. There is great difficulty in ensuring that the Regulations in existence are strictly enforced. Letters have recently been sent to all local authorities asking them to take all practicable steps to ensure stricter enforcement of the Regulations.

Mr. Snadden: Is my right hon. Friend aware that more than 70 outbreaks have taken place in the country in 1944? Does that not in itself prove that existing Regulations are ineffective?

Mr. Williams: My right hon. Friend is made aware very quickly of outbreaks of disease.

Mr. Turton: In view of the gravity of the situation I beg to give notice that I will raise the matter on the Adjournment, at the earliest opportunity.

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Proprietary Medicines

Mr. J. Dugdale asked the Minister of Health whether he will have an enquiry made into all proprietary medicines claiming to cure certain diseases, with a view to warning the public against those found not to act in accordance with their claims.

Mr. Willink: I do not think that action on these lines would be practicable. But I would remind my hon. Friend that it is already unlawful to advertise any article for the treatment of certain diseases, including cancer, diabetes, tuberculosis and venereal diseases.

A CENTRAL AFRICAN COUNCIL

In the House of Commons, on Thursday of last week, Colonel Oliver Stanley, Secretary of State for the Colonies, announced that it was proposed to establish a Standing Central African Council covering Southern Rhodesia, Northern Rhodesia, and Nyasaland, with a permanent Inter-Territorial Secretariat. The Council will be consultative in character, but it is contemplated that it should deal, *inter alia*, with communications; economic relations; industrial development; research; education; and agricultural, veterinary and medical matters. It is further contemplated that permanent standing committees of the Council be set up to deal with them.

The Government realise that the Southern Rhodesia Government still adhere to their view that the three Territories should be amalgamated; while that is regarded as impracticable, His Majesty's Government are confident that the present scheme will, by ensuring a closer contact and co-operation, make an important contribution to the future prosperity of the two Rhodesias and Nyasaland.

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GUY SUTTON MEMORIAL FUND

(9, Red Lion Square, London, W.C.1)

The following additional donation has been received:—

	£	s.	d.
Miss Margaret V. L. Ogilvie	2	2	0
Previously reported	1,237	7	6
	£1,239	9	6

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Nov. 1st.—Meeting of the Scottish Metropolitan Division, N.V.M.A., at Edinburgh (" Dick " College), 2.30 p.m.

Nov. 2nd.—Meeting of Central Division, N.V.M.A., Conway Hall, W.C.1, 2 p.m.

Nov. 2nd.—Meeting of the Lancashire Division, N.V.M.A., at the University of Liverpool, 2.30 p.m.

Nov. 2nd.—Meeting of the Derbyshire Division, N.V.M.A., at Sutton Bonington (Midland Agricultural College), 2 p.m.

Nov. 3rd.—Meeting of the Sussex Division, N.V.M.A., at the Old Ship Hotel, Brighton, 2.15 p.m.

Nov. 16th.—Meeting of the South-Eastern Division, N.V.M.A., at Tonbridge (Rugby Football Club), 2.30 p.m.

Nov. 25th.—Annual General Meeting of the Society of Women Veterinary Surgeons, in London (69, Great Peter Street, S.W.1), 2.15 p.m.

Nov. 29th.—Meeting of the Royal Counties Division, N.V.M.A., at Reading (The University).

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N.V.M.A. Annual General Meeting

Professor Wm. C. Miller elected President

In the reasonably confident hope that this would be the Association's last war-restricted occasion of the kind, members and their ladies assembled in good heart and numbers in the Connaught Rooms, Kingsway, on Thursday of last week for the sixty-second Annual General Meeting. For the profession, as for the country, the past has been a year of good augury. Its major veterinary features have been matters of common concern to all graduates, however, while the annual function represents the focal point of the life of the Association. It was the more to be regretted, therefore, that the uncertainties of war developments at the time when definite arrangements could no longer be left in doubt, necessitated a curtailment of even the limited programme previously arranged. Nevertheless the sacrifice of the customary Conference served to concentrate interest on the important items demanding the attention of members at the annual meeting and at the special meeting of the Council devoted to consideration of the second report of the Loveday Committee, on the following day. A further valuable measure of compensation was provided by the talk given by Mr. J. O. Powley on " Contagious diseases, control by personal disinfection, etc.", while the social aspect of the meeting was very happily epitomised in the reception held by the President and Mrs. Hancock at the Waldorf Hotel on Thursday evening. An extended account of all these proceedings will be published at an early date.

The President, having extended a hearty welcome, in particular to the considerable number of American officer visitors present, took "the shape of things to come" in the daily round of our professional life, as the topical theme of his Presidential address. For good or ill, the veterinarian's prospects of an adequate financial return for the exercise of a high degree of hardly won specialised skill is no longer more or less automatically dependent upon his industry and talent as an individual. Increasingly he defies the scriptural fiat that no man can serve two masters, in that a major part of his work on the farm is done for the client at the bidding and cost of the State. There is danger inherent in a virtual dictatorship of a few ruling members of a State Department in matters of health and disease on the farm; nevertheless, with things as they are, allegiance must be given—and has been fully accorded by the Association—to so preponderant an employer of the veterinarian's time and abilities. There was, however, a mutual responsibility, and there was much room for improvement in such matters as representation of members of the profession on official committees. On the State service issue—did the present compromise of X whole-time officers plus Y part-time practitioners represent the best method of rendering that service? The majority opinion probably would be " Yes ": that reply he would counter with the further query, " What will happen when X becomes greater than Y? " For expounded reasons, the President " confessed to a secret weakness " for another form of long-term compromise: the purchase, as opportunity offers, of private practices by the State. This phase of the address concluded with a striking tribute to the officers of the Animal Health Division for their altruistic service—not least to the N.V.M.A.—and a declaration that the Association would be behind the whole-time staff of the Ministry in any effort to right what was a major wrong—the inadequacy of their salaries as compared with those paid in cognate Government services. A very similar discrepancy, which here again reacted disastrously against recruitment of the right type of entrant, existed in the Colonial Veterinary Services, for whose personnel should be demanded the " square deal " that would bring them into closer relationship with their medical colleagues.

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The report of the Loveday Committee had brought veterinary education to the forefront of current problems: it was (said the President) fatally easy for us to lose the good things implicit in the report if we allowed ourselves to develop a negative destructive attitude instead of a positive and constructive one based upon reasoned argument. On the " association with the universities " issue, if it was as vocationalists pure and simple that we considered our course of training, then there was a lot to be said for the *status quo*—the Royal College having given us, on the whole, a first-rate educational course. But if we can re-orientate our attitude to the universities, so that we receive within our ranks, from them, our fair share of the finest brains, capable of remedying the weaknesses of veterinary strategy, of defending our interests with the requisite statesmanship and knowledge of affairs—then at last we shall achieve the final pinnacle that will put us on an equal footing in the eyes of the world with other learned callings. The door held open to admit the traveller could also close to bar his progress.

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A plea to the younger generation of writers to follow the example of those, mainly older, members who have devoted so much selfless labour to the preparation of Association reports and handbooks preceded a perorative reference to the agricultural industry, with the stability and prosperity of which is inseparably bound the well-being of the profession, as of the whole nation. With peace at our elbow, Government intention theretoward was at yet undisclosed. Only if it were known that agriculture is to become the prime and protected industry of these islands—an industry able to pay its own as well as our way—could there be found a reasonable hope of sturdy independence. " An

all-party declaration to this effect would do more to put the land in good heart than all the sylvan conferences held up to date. And, if they are in good heart, so are we."

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Nowadays Presidents, N.V.M.A., are men of wide contacts in virtue of the expanding sphere of influence of the organisation they lead, and much prestige has accrued to both Major Hancock and the Association through the imperturbable manner of his handling of many pressing and difficult problems. He is succeeded in the chair by Professor Wm. C. Miller, M.R.C.V.S., F.R.S.E., Professor of Animal Husbandry at the Royal Veterinary College, who thus receives—albeit with the reluctance of the modest labourer who prefers to remain " behind the scenes "—the recognition pressed upon him by those best in a position to assess the value to the Association, over many years, of his sterling work and worth. As President-Elect we have Mr. Geo. N. Gould, of Southampton, a busy practitioner who nevertheless has made time to put in a prodigious amount of spade work for the N.V.M.A.—more particularly, as has Professor Miller, in the arduous field of scientific surveys and reports. It was in 1938 that Capt. W. G. Wragg relinquished office as Hon. Treasurer after a long period of service. He rejoined the team of officers as Hon. Secretary on the elevation of the then tenant, Dr. W. R. Wooldridge, to the chair in 1941, since when he was placed the Association yet further in his debt. The Hon. Secretaryship now passes to Captain T. L. Wright, of Putney, who, as Chairman of the Organising Committee, has revealed himself to possess those qualities of vigour and sound judgment that render most justifiable the further introduction of " new blood " to the Association's Executive. The Hon. Treasurership remains in the experienced hands of Mr. H. E. Bywater.

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Reference to the award of the Dalrymple-Champneys Cup and Medal to Mr. Ll. E. W. Bevan—so very gratifying to the large number of his colleagues who are aware of the great value of his contributions to veterinary scientific research in the Colonial Empire—brings us to the two motions on the agenda, both of which were thoroughly well debated. The first, standing in the name of Mr. L. G. Anderson, could be described as the product of experience, in that he is the Chairman of the Editorial Committee. In a personal capacity, however, he sought a reconsideration of the ruling of the Annual Meeting of 1939, rendering obligatory the submission to Council, before publication, of editorials on questions of major policy, on the ground that it has " devitalised " the Editorial Committee in the production of editorials, by barring it from expressing the views of the profession on topical subjects at a time when such a course is necessary. His plea that this ruling should be reconsidered eventually found favour, such reconsideration being referred to the Council.

In his motion, Mr. Steele-Bodger carried to the final forum of Association opinion his concern that the use, as a noun, of the all-too-facile abbreviation " vet." should be condemned, and that officers of the Association and others having occasion to speak on behalf of members of the profession should at all times refer to, and encourage others to refer to, fellows and members of the Royal College as Veterinary Surgeons. Despite the implication by many supporters that a profession essaying mass entry through the portals of our foremost seats of learning should be, as it were, " warned off " a term with, as many maintain, something of a " back-door " association, the motion was allowed to lie on the table, a leading factor in its fate being the complimentary aura unquestionably accompanying the employment of " vet." as a verb.

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On the following day there was little, if any, diminution of the attendance on the occasion of the special meeting of Council held to consider the recommendations made in the second report of the Loveday Committee in the light of the views received from the Divisions. A full-dress debate ensued and will be fully reported in our Supplement in due course. Motions were passed expressive of the appreciation of the labours of the Committee towards improving veterinary education and raising the standard of the veterinary profession and, further, noting with much gratification the steps taken by Government bearing upon the recommendations of the report to institute a special enquiry into unqualified veterinary practice. A third motion was passed expressing the opinion of Council that the main recommendations of the report provide a reasonable basis for discussion but calling for the strengthening of the proposed powers of the R.C.V.S. with regard to registrable degrees and further setting forth the view that all veterinary schools in the universities should have the status of faculties or their full equivalent and that the heads of departments in all major subjects should be veterinary surgeons.

With a view to bringing these decisions to notice in the proper quarters, it was resolved that a letter embodying them be forwarded to the Ministry of Agriculture as soon as possible, and it was decided to set up a special committee to watch the progress of affairs in connection with all Loveday Committee matters. Nomination of the members of this committee was deferred and it was agreed that the terms of reference should be detailed by the officers.

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PERSONAL

Major R. J. H. Dixon, R.A.V.C., son of Mr. J. A. Dixon, Chief Veterinary Officer, Leeds, has been transferred from the Indian Army back to the British Army in the Middle East and has been given command of a veterinary hospital.

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Appointment.—Mr. Robert W. Roach, B.Sc., M.R.C.V.S., Assistant Veterinary Investigation Officer attached to the University of Bristol, is shortly to take up a Government appointment in the Dominion of New Zealand, where he will be working on problems connected with mastitis.

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Birth.—Hartley.—On October 2nd, 1944, to Noreen, wife of John C. Hartley, M.R.C.V.S., of Metheringham, Lincs.—a daughter, Goil Angela.

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Marriage.—Hancock—Taylor.—At Elm Ridge Church, Darlington, on October 17th, 1944, James L. Hancock, B.V.Sc., M.R.C.V.S., son of Mr. G. Hancock, to Audrey, elder daughter of Mr. and Mrs. P. Taylor. Both of Darlington.

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ATTESTED HERDS IN WALES

Speaking in the recent debate on Welsh affairs, the Minister of Agriculture, Mr. R. S. Hudson, said that, on the question of animal health and the control of animal diseases, Wales was in rather a remarkable position before the war, because she had a higher proportion than England of attested herds and, despite the difficulties, the total number of attested herds had actually increased by 3,000. That was a very good record indeed. Some of his committees, as the result of the reopening of attestation, were trying to work out plans to see whether it was possible to clear whole parishes—some would like to clear whole counties—of tuberculous cattle and get all the herds attested. That would be an enormous advantage to Welsh agriculture, because it would create a reservoir of healthy cattle which could be used to build up herds in England. There were all sorts of problems in this, however, and he hoped hon. Members would support him if he had to come to the House and ask for further powers.

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

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VETERINARY EDUCATION: THE LOVEDAY REPORT

Sir,—May I draw your attention to chapter II of the Second Report of the Committee on Veterinary Education, and in particular to para. 12, page 8, which deals with the number, size and location of veterinary schools? Regarding the proposed new schools I have no comment to offer about Bristol, and would confine my remarks to a question of the real suitability of Cambridge as a potential centre of veterinary education. As detailed in the report, the advantages of Cambridge would appear to be overwhelming, but these, I think, should be very carefully counterbalanced by certain obvious disadvantages. The first is that a veterinary school should be located in or near a populous centre, and secondly it should be in the midst of important stock-breeding interests, that is, where animal husbandry predominates over crop husbandry. The former is necessary to furnish the raw material for a successful school, and the latter to provide an abundance of clinical material for teaching purposes. Cambridge fulfils neither requirement. It is not a populous area and lies in the midst of a corn belt. It would function only by attracting brilliant or rich students who could just as easily receive a better training elsewhere. Contact with the allied sciences renders Cambridge more valuable for post-graduate students. I should think that the omens for a successful veterinary school are much more favourable on Tyneside or, say, Leeds, both of which not only fulfil the above requirements, but already possess university medical and agricultural schools. When the report reaches the stage of official discussions, I trust that the above points may be kept in mind.

Yours faithfully,

King's College, W. Lyle Stewart.
Newcastle-upon-Tyne, 2.
October 17th, 1944.

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STANDARD OF EXAMINATIONS

Sir,—The unfortunate controversy which has recently appeared in your columns between Mr. Donald Campbell and Mr. Gould concerning the standard of examinations set by the Court of Examiners for the students of different colleges, emphasises the serious reduction in the scientific status of the veterinary profession which might arise if universities conducted their own "internal examinations" and *required* the Royal College of Veterinary Surgeons to "register" their graduates.

The salaries offered by certain universities in your issue of October 7th clearly indicate the low esteem in which the science and art of veterinary surgery and medicine is held by these august bodies.

Even unskilled agricultural labourers are now demanding £4 10s. a week.

Yours faithfully,

Little Common, Sussex. Ll. E. W. Bevan.
October 13th, 1944.

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"SOME CLINICAL DIAGNOSTIC METHODS OF USE IN CONDITIONS ASSOCIATED WITH ANIMAL PARASITES"

Sir,—With reference to the correspondence on the appearance of coccidial oöcysts of one species of animals in the faeces of another species, it might be of interest to record that in Scotland I have found that oöcysts, morphologically resembling those of *E. arloingi* of sheep, occur relatively commonly in fowl faeces, and oöcysts, apparently those of rabbit coccidia, are occasionally present in the faeces of sheep. I have not detected oöcysts of other species of animals in the faeces of carnivores (dogs and silver foxes).

I have found oöcysts conforming with the description of *E. solipedum* in specimens of equine faeces sent me from Yorkshire, and think equine coccidiosis may be as prevalent in this country as it is in Russia. With reference to Gousseff's second species of the horse, *E. ungulata*, it hardly seems to me justifiable to accept that different species of coccidia infest a host because slight variations in size and shape are encountered in the oöcysts. I am inclined to think that the stage of infection, the resistance of the host and other factors may influence the morphology of the oöcyst, and that separate species should only be accepted when differences have been established in the development cycle and the morphological characteristics of the other stages of development, as has been done for the coccidial species of the fowl.

Yours faithfully,

110, Craiglea Drive Edinburgh, 10. U. F. Richardson.
October 14th, 1944.

THE ABBREVIATION "VET."

Sir,—Of what use is this recurring fuss about the abbreviation "Vet."? All the resolutions in the world will not influence the public to refrain from the use of the popular title, at once so slick and so useful. It is the fashion of our time. I doubt if there is a practitioner in the country who is not widely known in his locality as "the Vet.", his name in many cases being obscured by this appellation. Many times each day he is asked the question, "Are you the Vet.?" The habit is chronic. A well-worn and long-used "short cut" becomes a right of way. "Vet." is already a right of way in our language. Recognise it as such and make the best of it. The attempt to correct is taken (by most persons) as a pedantic and snobbish affectation. But is there anything fundamentally wrong with "Vet." as a word? For international use it would be ideal.

How many veterinary surgeons are not engaged in any way as surgeons? They are not, strictly speaking, veterinary surgeons. How many, on the other hand, are not much more than surgeons? "Veterinary Surgeon" is not a correct, all-embracing designation. The appellation "Vet." will come in time to connote the average type of our profession and to the degree that we earn a high social standing in the community by virtue of our work and conduct will the abbreviation "Vet." become a title to be proud of.

Yours faithfully,

249, Milngavie Road, John M. Mitchell.
Bearsden, Glasgow.
October 15th, 1944.

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Sir,—It would be idle to deny that any one of us does not resent being addressed, or referred to, by the abbreviation of the double-barrelled designation given us at our baptism. In view of our age, I doubt if we shall ever succeed in throwing it off.

There is consolation in the knowledge that the verb, "to vet," is universally known as a test for the soundness of an article or person. The noun, whether in full or abbreviated, signifies one engaged in the alleviation of animal suffering and the prevention of disease.

On the other hand, the verb of "to doctor" can be interpreted as an attempt at adulteration. The noun of "doctor" is no longer confined to one engaged in the art of healing: he may teach Divinity, music, or be a philosopher.

In all probability, the best answer ever given to a query as to what value could be attached to a name was, that it counted for nothing except when it was written at the right hand bottom corner of a cheque for a substantial amount which the bank involved would discharge in full.

As Trevelyan notes in his latest work *English Social History*, at heart the Englishman is a snob with the love for a title, and Harrison, writing on the conditions prevailing in the days of Shakespeare's boyhood, tells us that in return for being addressed as "Master" the holder was expected to tip largely, not to look closely at a bill, and to remember that it is the privilege of a gentleman to get the worst of a bargain!

What seemed to impress an old cab proprietor, who many years ago got the worst of a horse deal, was the fact that the one who had so severely bitten him insisted on calling him "Mister."

Yours faithfully,

"Rothiemurchus," J. F. D. Tutt.
St. Cross, Winchester.
October 14th, 1944.

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Sir,—Ever since I qualified I have been "barking up the same tree" as Mr. Steele-Bodger, but I fear, like "a voice crying in the wilderness," with little effect. Not a few of our members seem to glory in the use of the expression and some I have noted add it to their telegraphic address. Even those in high places are not, "like Caesar's wife, above suspicion," for to wit I received only last week a parcel from the Ministry's Laboratory addressed to me, "Vet." Surgeon, and I find in this week's *Record* the word "vet." appeared three times.

But after cleaning up our own Augean stables what about "the man in the street"; does one think he can be so easily converted? It was only a short time ago I read an address in *The Times* given by the Duke of Norfolk, and I noticed he used the word "vet." three times.

But the real truth is, the word "veterinary" is too much of a mouthful, and quite a few people do not even know how to spell it; further, it is an un-British word and should be relegated to the limbo of the illiterate past.

Yours faithfully,

Fryern Hall, Bridgwater. W. M. Scott.
October 16th, 1944.